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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,077	05/01/2007	Meir Uri	27575U	4031
20529 7590 06/08/2009				
THE NATH LAW GROUP				
112 South West Street				
Alexandria, VA 22314				
EXAMINER				
KOAGEL, JONATHAN BRYAN				
ART UNIT		PAPER NUMBER		
3744				
MAIL DATE		DELIVERY MODE		
06/08/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/588,077

**Applicant(s)**

URI ET AL.

**Examiner**

JONATHAN KOAGEL

**Art Unit**

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 April 2009.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-43 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-43 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 31 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/CIS)  
4) ☐ Interview Summary (PTO-413)  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_  
Paper No(s)/Mail Date \_\_\_\_\_

## DETAILED ACTION

### *Specification*

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because the legal phraseology "comprising" is used in lines 2 and 6. Correction is required. See MPEP § 608.01(b).

### *Claim Objections*

Claims 4, 14, 28 and 35 are objected to because of the following informalities:

- The recitation "inner surfaces of the plates are parallel to side walls of the containers" (claim 4 lines 1-2, claim 28 lines 1-2) should be changed to -- inner surfaces of the plates are parallel to side walls of the **container**-- for proper antecedent basis and clarity.
- The recitation "wherein the processor is capable of controlling at least one of the list including" (claim 14 lines 1-2, claim 35 lines 1-2) should be changed to --wherein the processor is capable of controlling at least one

of a list including-- for proper antecedent basis and clarity. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arav US Patent No. 5,873,254 and further in view of Polk US Patent No. 3,074,247.

Regarding claim 1, Arav teaches in fig. 1A, an apparatus capable of freezing a biological sample in a container 38 while moving along a longitudinal axis (horizontal axis through the middle of 12, 14 and 16) of the apparatus, the container 38 having a first container dimension (height of container 38) perpendicular to the axis, a second container dimension (horizontal length of container 38) parallel to the axis, and a container thickness (container dimension extending into fig. 1A), the first container dimension being defined by the maximum level which said sample may have along the first container dimension, the apparatus comprising, at least one set of two cooling plates 12, 14 with inner surfaces having a first plate dimension perpendicular to the axis and a second plate dimension parallel to the axis, defining therebetween a passage A (See annotated figure below) which is no longer than said first plate dimension, the first

plate dimension being at least as large as the level of the biological sample (sample in 38) along the first container dimension and a motion unit 44 capable of movement of the container 28 through said passage A along the axis so as to allow cooling of the sample by conduction from the inner surfaces of the plates 12, 14 (column 3 line 67-column 4 lines 2-9). Arav fails to explicitly teach a passage whose width corresponds to the container thickness.

However, Polk teaches in figs. 3 and 6, a passage B (See annotated figure below) whose width corresponds to a container P thickness. It would have been obvious to a person of ordinary skill in the art to allow for the passage width to correspond to a container thickness in order to increase the heat transfer rate from the cryogenic fluid to the sample container to achieve an efficient and fast method of freezing a biological sample.

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify Arav with the teachings of Polk to include a passage thickness that corresponds to a container thickness in order to increase the amount of heat transferred from the container to the cryogenic fluid. This results in a faster cooling rate due to the direct contact of the sample container and the plate containing the cryogenic fluid.

Regarding claims 2 and 27, Arav as modified above teaches the invention as disclosed and Arav further teaches in fig. 1, wherein the plates 12, 14 are oriented vertically, the first plate dimension being the height.

Regarding claim 27, the apparatus of claim 2 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 2.

Regarding claim 3, Arav as modified above teaches the invention as disclosed and Polk further teaches in fig. 1, wherein a set of plates 11 are oriented horizontally (when fig. 1 is viewed from an orientation of having an upper and a lower plate) the first plate 11 dimension being the width.

Regarding claims 4 and 28, Arav as modified above teaches the invention as disclosed and Polk further teaches in fig. 5, wherein the inner surfaces of the plates 11 are parallel to side walls of the container P, the inner surfaces being designed so to allow said movement and said cooling (column 2 lines 17-29).

Regarding claim 28, the apparatus of claim 4 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 4.

Regarding claims 5 and 29, Arav as modified above teaches the invention as disclosed and Arav further teaches in fig. 1, a retention device 40 capable of holding the container 38 (column 3 line 67-column 4 line 4).

Regarding claim 29, the apparatus of claim 5 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 5.

Regarding claims 6 and 30, Arav as modified above teaches the invention as disclosed and further teaches in fig. 1, the set of plates 12, 14 separated by a gap 18. Polk teaches in fig. 1, an additional set of cooling plates 11. It would have been obvious to a person of ordinary skill in the art at the time of invention to include an additional set of cooling plates wherein the sets of cooling plates are separated by a gap in order to allow for a longer passageway which results in a longer cooling process for samples that need long term storage cooling. The gap allows the user to see into the passageway to prevent a sample from becoming too frozen.

Regarding claim 30, the apparatus of claim 6 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 6.

Regarding claim 7, Arav as modified above teaches the invention as disclosed and Arav further teaches in fig. 1B, wherein the cooling plates comprise at least one channel 72, 54 capable for flow of a cryogenic fluid therethrough (column 4 lines 55-62).

Regarding claim 8, Arav as modified above teaches the invention as disclosed and Arav further teaches wherein the cryogenic fluid includes liquid nitrogen (column 4 lines 55-62).

Regarding claims 9 and 31, Arav as modified above teaches the invention as disclosed and Arav further teaches wherein at least one freezing parameter is controlled by a feedback control system (column 4 lines 22-25).

Regarding claim 31, the apparatus of claim 9 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 9.

Regarding claims 10 and 32, Arav as modified above teaches the invention as disclosed and Arav further teaches in fig. 1, a heating arrangement 56, 57, 58 associated with said cooling plates (column 4 lines 9-13).

Regarding claim 32, the apparatus of claim 10 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 10.

Regarding claim 11, Arav as modified above teaches the invention as disclosed and Arav further teaches wherein the heating arrangement 56, 57, 58 comprises at least one electric resistance heater (column 4 lines 9-13).



Regarding claims 12 and 33, Arav as modified above teaches the invention as disclosed and Arav further teaches wherein the feedback control system comprises temperature sensors (column 4 lines 22-25).

Regarding claim 33, the apparatus of claim 12 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 12.

Regarding claims 13 and 34, Arav as modified above teaches the invention as disclosed and Arav further teaches wherein the feedback control system comprises a processor. Arav disclosed thermocouples which need to send information sensed to a controller or processor and therefore it is obvious that Arav has a processor.

Regarding claim 34, the apparatus of claim 13 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 13.

Regarding claims 14 and 35, Arav as modified above teaches the invention as disclosed and Arav further teaches in fig. 1B, wherein the processor is capable of controlling at least one of a list including flow of cryogenic fluid (column 4 lines 53-62). Arav disclosed an electrically activated valve which has to be controlled by a controller or processor to control the flow of cryogenic fluid.

Regarding claim 35, the apparatus of claim 14 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 14.

Regarding claims 15 and 36, Arav as modified above teaches the invention as disclosed and Arav further teaches in fig. 1, a monitoring means 60 (column 4 lines 41-45).

Regarding claim 36, the apparatus of claim 15 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 15.

Regarding claims 16 and 37, Arav as modified above teaches the invention as disclosed and Arav further teaches wherein the monitoring means 60 comprises a video camera (column 4 lines 41-45).

Regarding claim 37, the apparatus of claim 16 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 16.

Regarding claims 17 and 38, Arav as modified above teaches the invention as disclosed and Arav further teaches in fig. 1, wherein the monitoring means comprises a device 64 capable of taking a temperature measurement of the biological sample during freezing (column 4 lines 49-51).

Regarding claim 38, the apparatus of claim 17 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 17.

Regarding claims 18 and 39, Arav as modified above teaches the invention as disclosed and Arav further teaches wherein the device 64 is an infrared thermograph (column 4 lines 49-51).

Regarding claim 39, the apparatus of claim 18 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 18.

Regarding claims 19 and 40, Arav as modified above teaches the invention as disclosed and Arav further teaches in fig. 1, a first chamber C (See annotated figure below) capable of receiving the container, a second chamber D (See annotated figure below) capable of performing freezing and a third chamber E (See annotated figure below) capable of removal therefrom of the container 38 after freezing, said chambers constituting at least a portion of the passage A.

Regarding claim 40, the apparatus of claim 19 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 19.

Regarding claims 20 and 41, Arav as modified above teaches the invention as disclosed and Arav further teaches in fig. 1, wherein the apparatus is capable of initiating the freezing within the first chamber C.

Regarding claim 41, the apparatus of claim 20 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 20.

Regarding claim 21, Arav as modified above teaches the invention as disclosed and Arav further teaches in fig. 1, wherein the apparatus is capable of initiating the freezing external to the passage A. Refrigeration device 50 is capable of initiating the freezing before (left of) the passage A through convection within the passage.

Regarding claim 22, Arav as modified above teaches the invention as disclosed and further teaches in fig. 1, wherein the apparatus is capable of initiating the freezing in an area of the container 38 (before entering passage A, via refrigeration device 50), and to introduce the container 38 into the passage A after the initiation, wherein during the initiation, the container 38 is disposed such that the area is near the top F (See annotated figure below) thereof and during introduction into the passage the area is near the front G (See annotated figure below) in the direction of movement. Heat will be transferred from the refrigeration device 50 to the top F of the container in the initiation phase from convection. When the container enters into the passage A, the front G will be directly contacted with a cold temperature from the refrigeration device 50.

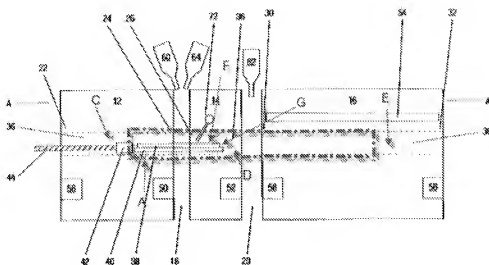


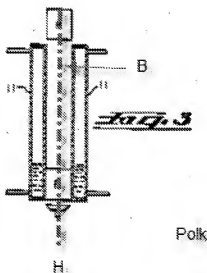
FIG. 1A

Arav

Regarding claim 23, Arav as modified above teaches the invention as disclosed and Arav further teaches in fig. 1, wherein the third chamber E is capable of cooling the container 38 to a temperature which is below that achieved as a result of freezing. The channel 54 near the third chamber E which contains liquid nitrogen (column 4 lines 53-62) can allow heat to be transferred from the frozen container 38 to the liquid nitrogen even after freezing has been achieved.

Regarding claims 24 and 42, Arav as modified above teaches the invention as disclosed and Polk further teaches in fig. 3, wherein the axis H (See annotated figure below) is disposed vertically.

Regarding claim 42, the apparatus of claim 24 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 24.



Regarding claims 25 and 43, Arav as modified above teaches the invention as disclosed and Arav further teaches in fig. 1, the apparatus capable of initiating the freezing internal to the passage A (through refrigeration device 50), the movement taking place from a lower portion (left side) of the passage A to a higher portion (right side) of passage A.

Regarding claim 43, the apparatus of claim 25 is capable of performing the method recited here since the claim incorporates equivalent limitations as recited in apparatus claim 25.

Regarding claim 26, Arav as modified above teaches the invention as disclosed and Arav further teaches in fig. 1, a method of cooling a biological sample, the method comprising providing an apparatus according to claim 1, inserting therein a container 38 containing a biological sample, providing a predetermined temperature gradient along the axis and moving the container 38 through the passage along the axis (column 4 lines 1-8, 18-22).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN KOAGEL whose telephone number is (571)270-7396. The examiner can normally be reached on Monday through Friday 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Jules can be reached on (571)272-6681 or Cheryl Tyler (571)272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. K./  
Examiner, Art Unit 3744  
27 May 2009

/Cheryl J. Tyler/  
Supervisory Patent Examiner, Art  
Unit 3744